

TRANSMITTAL FORM FOR FILING PATENT APPLICATION

Attorney

Docket No.: SYNER-162XX

WEINGARTEN, SCHURGIN, GAGNEBIN & HAYES LLP

Ten Post Office Square

Boston, Massachusetts 02109

Telephone: (617) 542-2290

Telecopier: (617) 451-0313

Express Mail No: EL418429697US

Date: August 9, 2000

First Named Inventor or Application

Identifier: James S. Hiscock et al

BOX PATENT APPLICATION

Assistant Commissioner for Patents

Washington, D.C. 20231

Sir:

Transmitted herewith under 37 CFR § 1.53 for filing is the patent application of:

Inventor: James S. Hiscock, Kiwon Chang, Floyd Backes, Myles Kimmit

Entitled: **SELF SERVICE DATA INTERFACE**

☐ This is a request for filing a ☐ **continuation** ☐ **divisional** ☐ **continuation in-part** application under §1.53(b) of prior Application No. _____, filed _____ entitled:

Enclosed are:

☒ 14 pages of written description, claims and Abstract, inclusive☒ 2 sheets of ☐ informal ☒ formal drawings of Figs. 1-2 (one set)☒ Oath or Declaration☒ Newly executed (original or copy)☐ Copy from prior application (37 CFR 1.63(d)) (for continuation/divisional).

The entire disclosure of the prior application, from which a copy of the oath or declaration is supplied, is considered as being part of the disclosure of the accompanying application and is hereby incorporated by reference therein.

☐ To be filed later☒ Cover sheet and Assignment of the invention to: 3COM CORPORATION

☐ Certified copy of a _____ application (if foreign priority is claimed) with letter claiming priority under Rule 55.

☐ Information Disclosure Statement with ___ citations☐ Preliminary amendment is enclosed.☒ Return receipt postcard☐ Other:

08/60/80
JCS53 U.S. PTO


JCS86 U.S. PTO
09/635275
08/09/00

TRANSMITTAL FORM FOR FILING PATENT APPLICATION (CONTINUED)

Attorney

Docket No.: SYNER-162XX

- ☐ Verified statement of Small Entity status (§1.9 and §1.27)
- ☐ Verified statement of Small Entity was filed in prior application. Status still proper and desired
- ☐ Priority is claimed under 35 USC § 120 as indicated on the attached sheet 4.
- ☐ Priority is claimed under 35 USC §119(a)-(d) as indicated on the attached sheet 4.
- ☒ Priority is claimed under 35 USC §119 (e) as indicated on the attached sheet 4.
- ☒ James F. Thompson is hereby appointed Associate Attorney by:
Registration No.: 36,699


Attorney of Record: Victor B. Lebovici
Registration No.: 30,864

- ☐ **Power of Attorney** in the originally-filed application has been granted to one or more of the registered attorneys listed below. The attorneys listed below not previously granted power in the originally-filed application, as well as _____, are hereby given associate power:
Registration No.:

Stanley M. Schurgin, Reg. No. 20,979
Charles L. Gagnebin III, Reg. No. 25,467
Paul J. Hayes, Reg. No. 28,307
Victor B. Lebovici, Reg. No. 30,864

Eugene A. Feher, Reg. No. 33,171
Beverly E. Hjorth, Reg. No. 32,033
Holliday C. Heine, Reg. No. 34,346
Gordon R. Moriarty, Reg. No. 38,973

CLAIMS FILED:	MINUS BASE:	EXTRA CLAIMS:	RATE:	BASIC FEE:
				\$690.00
Independent	2 - 3	= -0-	x \$78.00 =	-0-
Total	20 - 20	= -0-	x \$18.00 =	-0-
<input type="checkbox"/> Multiple Dependent Claims (1st presentation)			+ \$260.00 =	-0-
SUBTOTAL FILING FEE				\$690.00
Small Entity filing, divide by 2. (Note: verified statement must be attached per §1.9, §1.27, §1.28.)				
TOTAL Filing Fee				\$690.00

Attorney Docket No.: SYNER-162XX

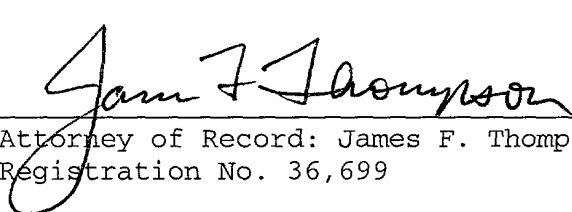
TRANSMITTAL FOR FILING PATENT APPLICATION (CONTINUED)

- ☒ [X] The filing fee has been calculated above; a check in the amount of \$690.00 is enclosed.
- ☐ [] The filing fee will be submitted at a later date.
- ☒ [X] In the event a Petition for Extension of Time under 37 CFR §1.17 is required by this paper and not otherwise provided, such Petition is hereby made and authorization is provided herewith to charge Deposit Account No. 23-0804 for the cost of such extension.
- ☒ [X] The Commissioner is hereby authorized to charge payment of any additional filing fees under 37 CFR §1.16 associated with this communication or credit any overpayment to Deposit Account No. 23-0804.

[X] Customer Number 207

Address all future communications to:

WEINGARTEN, SCHURGIN, GAGNEBIN & HAYES LLP
Ten Post Office Square
Boston, Massachusetts 02109
Telephone: (617) 542-2290
Telecopier: (617) 451-0313


Attorney of Record: James F. Thompson
Registration No. 36,699

Attorney Docket No.: SYNER-162XX

TRANSMITTAL FOR FILING PATENT APPLICATION (CONTINUED)

[] Priority is claimed under 35 USC § 120 of prior Application(s)
No. _____, filed _____, entitled:

[] The above-identified application(s) is/are assigned of record to:

[] Priority is claimed under 35 USC § 119 (a)-(d) of the following application(s).

_____	_____	_____
(Application Number)	(Country)	(Filing Date)
_____	_____	_____
(Application Number)	(Country)	(Filing Date)
_____	_____	_____
(Application Number)	(Country)	(Filing Date)

[] The above-identified application(s) is/are assigned of record to:

[X] Priority is claimed under 35 USC § 119 (e) of the following provisional application(s).

60/201,956	May 5, 2000
(Application Number)	(Filing Date)
_____	_____
(Application Number)	(Filing Date)
_____	_____
(Application Number)	(Filing Date)

[] The above-identified provisional application(s) is/are assigned of record to:

[] The claim of small entity status in the above-identified provisional application(s) is made in this application and a copy of the small entity form(s) from the provisional application(s) is/are enclosed.

SUBMIT IN TRIPLICATE
VBL/raw 231470-1

TITLE OF THE INVENTION
Self Service Data Interface

CROSS REFERENCE TO RELATED APPLICATIONS

5 This application claims priority under 35 U.S.C. §119(e)
of Provisional Patent Application No. 60/201,956, filed May 5,
2000, entitled "Self Service Data Interface and Flexible Data
Outlet".

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

--Not Applicable--

10 BACKGROUND OF THE INVENTION

The present invention is related to the field of
communications between a personal data device such as a
personal or hand-held computer and a data infrastructure such
as a computer network in a company or building.

15 Increasingly, computer networks are being used by
organizations in conducting their internal and external
business activities. As the use of computer networks has
grown, demand for skilled workers to operate and maintain the
networks has increased significantly. Organizations are faced
20 with significant costs of attracting and retaining necessary
workers, and uncertainty whether the organizations' needs for
skilled workers can be met at all. These costs and
uncertainties may render it difficult or impossible for some
organizations to make desired investments in computer
25 networking technology. Such organizations may be placed at a
competitive disadvantage, or may find that their very viability
has become uncertain.

Express Mail Number

EL418429697US

BRIEF SUMMARY OF THE INVENTION

In accordance with the present invention, a "self service" interface between users' personal data devices and a data infrastructure is disclosed that improves the openness and ease of use of the data infrastructure, thereby enabling wider use of information technology without the high costs and uncertainties described above.

The self service data interface includes communications logic providing communications with a personal data device and with a data infrastructure, such as the set of computer resources attached to a network in a department or building. A processor executes a data interface management process that communicates with the data infrastructure via the communications logic to obtain information about available data services, where the information includes information about how the available data services are accessed. The data interface management process also communicates with the personal data device to provide the information about the available data services to the user. The information can then be used by the personal data device to invoke the services directly via the self service data interface.

One particular advantage of the interface is the ability to monitor status of the data infrastructure as well as the status of the communications with the user. This enables a user to diagnose and correct some types of operational problems without the involvement of operations personnel. Also, information about the status of system problems can be provided to users without requiring the involvement of a system support personnel.

Other features of the disclosed self service interface include the use of multiple communications links to the user, including one or more wire-based links such as Ethernet links and/or one or more wireless data links. This configuration

provides desirable redundancy in the communications with the user, such that a problem on one link can be diagnosed using the other link, for example. As another feature, the information from the self service data interface may be provided in the form of a hypertext page that is easily accessed and handled by a standard browser within the personal data device. Pages may include hot links to enhance ease of use.

Other aspects, features, and advantages of the present invention are disclosed in the detailed description that follows.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING

Figure 1 is a diagram depicting a hierarchical scheme for communications between a user and a data infrastructure in accordance with the present invention; and

Figure 2 is a block diagram of a communications system incorporating the communications scheme of Figure 1.

DETAILED DESCRIPTION OF THE INVENTION

The disclosure of Provisional Patent Application No. 60/201,956, filed May 5, 2000, entitled "Self Service Data Interface and Flexible Data Outlet", is incorporated by reference herein.

In Figure 1, a user's personal data device (PDD) 10 is communicatively coupled to a data infrastructure 12. The PDD 10 may be a desktop computer, a portable computer, a palm-top computer or similar device that provides information services to a user. The data infrastructure 12 is a domain of applications programs and other data services. For example, the data infrastructure 12 may extend throughout an organization such as a company or a department, and/or may extend throughout a given physical space such as a set of

offices, an entire building or a campus of buildings. Properly authenticated users within the data infrastructure have access to some or all of the applications programs and data services available therein.

5 Figure 1 shows communications between the PDD 10 and the data infrastructure 12 using the well known multi-layer OSI model. According to this model, layer 7 is known as the "Application" layer, and is the highest layer in terms of abstracting the available communications functionality. Examples of layer-7 functionality include electronic mail (e-mail) and Internet browsers. Layers 6 through 1 in the OSI model are successively less abstract, such that at the lowest layer, layer 1 or the "Physical" (PHY) layer, the service provided is the transmission of a raw bit stream over a physical communications medium such as a copper cable. The multiple levels of communication between the PDD 10 and the data infrastructure 12 are shown in Figure 1 by arrows 14.

10
15
20 The data infrastructure 12 includes "layer 8" entities 16 operating above layer 7. The layer 8 entities 16 provide services referred to herein as "User Presentation" services, so named for their functional analogousness to the services of the (Application) Presentation layer 6. Just as layer 6 eases the interaction between applications at layer 7 and session services at layer 5, layer 8 eases the interaction between
25 users and layer 7 applications and services.

30 The layer 8 entities 16 are responsible for gathering, maintaining, and providing information about layer 7 applications and services available in the data infrastructure 12. A user accesses this information using a specified layer 7 application, such as a browser, in the PDD 10. The information provided at layer 8 may be in the form of Web pages, for example, containing the information about the applications and services available in the data infrastructure 12. A wide

variety of information may be maintained, including for example the names of applications and services that are available, the manner in which these items are accessed, and their respective costs.

5 A layer 8 entity 16 gathers pertinent information by communicating with other layer 8 entities and layer 7 entities within the data infrastructure 12. The layer 8 entity 16 then formats the information in a manner making it accessible to the user. In one embodiment, the information can be formatted as a page of hypertext using the well known Hypertext Markup Language (HTML). A more recently developed language known as Extensible Markup Language (XML) can be used to provide even greater flexibility in the definition and formatting of the layer 8 information. In either case, Layer 7 entities can be identified using hot links, for example. Preferably, a structured naming scheme is used to identify resources. Thus, for example, the links for print services in a facility of a company may be of the form <company name>.<location>.<print service identifier>, while the links for file services at the same location are of the form <company name>.<location>.<file service identifier>. Such a naming plan enhances the ease of use of the system, by enabling experienced users to fairly easily locate system resources.

20 A layer 8 entity 16 can interact with a user in a passive manner, i.e., by responding to the user's initiation of actions. For example, a layer 8 entity 16 may respond to a user's request for information about available e-mail services by searching the data infrastructure for such information, formatting the information and sending the formatted information to the PDD 10. A layer 8 entity 16 can also function in a more active manner. For example, a layer 8 entity 16 can present the user with a dialog box to query the user regarding the types of information and services that the

user finds of interest or is likely to use. Additionally, the user may be asked whether it is desirable to have information presented automatically, for example at some predefined regular interval. In such cases, the layer 8 entity 16 tailors its activity to the user's desires. In particular, the layer 8 entity 16 monitors the layer 8 and layer 7 entities in the data infrastructure 12 to detect changes in the information of interest, and then notifies the user of these changes. For example, the layer 8 entity may inform the user whenever a new e-mail service becomes available, or an existing e-mail service becomes unavailable.

Figure 2 shows a configuration of functional elements implementing the system shown in Figure 1. In Figure 2, a separate "self service data interface" 20 is shown between the PDD 10 and the data infrastructure 12 for ease of description. The self service data interface 20 can be realized as an item apart from the data infrastructure 12, as shown in Figure 2, or it can be part of the data infrastructure 12. As a separate item, the self service data interface 20 may reside in a unit physically close to the PDD 10, such as within a small enclosure forming part of a wall jack to which the PDD 12 can be connected. Alternatively, it may be useful to incorporate the functionality of the self service data interface 20 into a network switch, multiplexer, or similar device to which the PDD 10 is coupled within the data infrastructure 12.

As shown, the PDD 10 includes a browser 22 or similar application for obtaining layer 8 information. The PDD 10 also includes other applications programs 24, such as e-mail, calendar, word processing, etc. The PDD 10 also includes one or more communications interfaces 26. Preferably these include at least one interface to a high-speed wire link, such as an Ethernet link, and at least one wireless data interface. The wireless interface may advantageously employ an emerging

wireless standard referred to as "Bluetooth". One major feature of the Bluetooth standard is its specification of both point-to-point and point-to-multipoint connections, in which up to seven slave devices can communicate with a single master device. Additionally, several such master-slave collections can be linked together to form larger networks. Additionally, the Bluetooth standard specifies two power levels, one suitable for a relatively small area such as a room, and another suitable for a larger area such as a house or a suite of offices, and also includes security features. Although not shown in Figure 2, the PDD 10 includes the necessary protocol stacks for implementing layers 2-6 of the OSI communications model between the communications interfaces 26 and the applications 22 and 24.

The data infrastructure 12 includes a variety of applications and services 28 that are potentially available to a user of the PDD 10. Information about these applications and services are maintained in a site-specific information infrastructure 30. The information infrastructure 30 includes various information about the data infrastructure 12 that may be useful for a user. This information includes sets of instructions 32 for accessing the associated services, status information about the network and the applications, etc. The data infrastructure 12 also includes one or more communications interfaces 34 for communicating with the self service data interface 20 and the PDD 10.

The self service data interface 20 includes user-side communications interfaces 40 coupled to infrastructure-side communications interface(s) 42 by logic 44 that performs arbitration and multiplexing/demultiplexing functions. A data interface management process 46, which may be executed for example on a general-purpose microprocessor 45, is coupled to the logic 44 and is capable of communicating with both the PDD

10 and the data infrastructure 12. The data interface management process 46 monitors the respective statuses of the user-side communications interfaces 40 and the data infrastructure 12, including service access, availability and cost information contained therein. This information is stored in a location within the data infrastructure 12 that is well known to the data interface management process 46. For example, the data interface management process 46 may be configured with pointers to the information, or alternatively may contain a routine that is capable of locating the information. This status information is provided to the PDD 10 where it is displayed or otherwise made available to the user.

One particular function performed by the data interface management process 46 is to track error indications at the communications interfaces 40 and/or 42 and determine whether any detected errors are correctable by the user. For such errors, a listing of corrective action steps is supplied to the user via one of the interfaces 40, if possible. For example, it may be that an Ethernet cable between the PDD and the self service data interface 20 is not properly connected. If there is a wireless link established between the PDD and the self service data interface 20, then this link is used to provide instructions to the user for correctly installing the cable. For errors that are not correctable by the user, the user can be given information about the error, the system process by which the error is to be corrected, and the status of the process. For example, the user may be informed about the date and time the error was detected, whether an operator or maintenance person has been notified, the expected time by which the error should be fixed, and perhaps a telephone number or link to a person who can provide more information if desired.

A self service data interface and related components have been described. It will be apparent to those skilled in the art that modifications to and variations of the above-described technique are possible without departing from the inventive concepts disclosed herein. Accordingly, the invention should be viewed as extending to the full scope and spirit of the appended claims.

006080"5/25/95

CLAIMS

What is claimed is:

1. A self service data interface, comprising:

5 first communications logic operative to provide communications with a personal data device;

second communications logic operative to provide communications with a data infrastructure in a neighborhood of the self service data interface, the second communications logic being coupled to the first communications logic to enable communications between the personal data device and the data infrastructure; and

10 a processor coupled to the first and second communications logic, the processor being operative to execute a data interface management process including (i) interacting with the data infrastructure via the second communications logic to obtain information about available data services, the information including information describing the manner in which the available data services are accessed, and (ii) interacting with the personal data device via the first communications logic to provide the information about the available data services to a user of the personal data device.

20 2. A self service data interface according to claim 1, wherein the first communications logic includes at least first and second communications interfaces, the first communications interface interfacing to a wire link, and the second communications interface interfacing to a wireless link.

3. A self service data interface according to claim 2, wherein the wire link employs a carrier-sense multiple-access communications protocol.

5 4. A self service data interface according to claim 2, wherein the wireless link employs a master-slave communications protocol.

10 5. A self service data interface according to claim 1, wherein the information about the available data services provided to the personal data device is formatted as a hypertext page.

15 6. A self service data interface according to claim 5, wherein the hypertext page is a hypertext markup language (HTML) page.

20 7. A self service data interface according to claim 5, wherein the hypertext page is an extensible markup language (XML) page.

25 8. A self service data interface according to claim 1, wherein the information about the available data services provided to the personal data device includes hot links to locations within the data infrastructure at which the services can be accessed.

30 9. A self service data interface according to claim 8, wherein the hot links include text formatted according to a structured naming scheme.

35 10. A self service data interface according to claim 1, wherein the data interface management process further includes monitoring the status of the communications with the personal data device.

11. A self service data interface according to claim 1, wherein
the data interface management process further includes
monitoring the status of identified problems in the data
infrastructure, and providing information reflecting the
monitored status to the personal data device for use by the
user.

12. A method by which a user of a personal data device obtains
information about and access to data services available in a
data infrastructure to which the personal data device is
coupled, comprising:

storing information about the available data services in
a data infrastructure, the information including information
describing the manner in which the available data services are
accessed;

providing the information stored in the data
infrastructure to a user presentation entity responsible for
informing the user about the available data services including
the manner in which they are accessed, the user presentation
entity storing the information in a format enabling ready
retrieval and perusal by the user;

providing the information stored in the user presentation
entity to a cooperating entity in the personal data device for
presentation to the user;

generating, at the personal data device, a message
containing information provided from the user presentation
entity identifying a service to be accessed in the data
infrastructure, and sending the message to the data
infrastructure; and

upon receipt of the message from the personal data device
at the data infrastructure, invoking the identified service and
enabling the identified service to communicate with a

cooperating entity in the personal data device for user interaction with the identified service.

13. A method according to claim 12, wherein the entity
5 cooperating with the user presentation entity is a browser.

14. A method according to claim 12, wherein the information
about available data services provided to the personal data
device is formatted as a hypertext page.

15. A method according to claim 14, wherein the hypertext page
is a hypertext markup language (HTML) page.

16. A method according to claim 14, wherein the hypertext page
is an extensible markup language (XML) page.

17. A method according to claim 12, wherein the information
about available data services provided to the personal data
device includes hot links to locations within the data
infrastructure at which the services can be accessed.

18. A method according to claim 17, wherein the hot links
include text formatted according to a structured naming scheme.

19. A method according to claim 12, further comprising
25 monitoring, by the user presentation entity, of status of the
communications with the personal data device.

20. A method according to claim 12, further includes
30 monitoring, by the user presentation entity, of status of
identified problems in the data infrastructure, and providing
information reflecting the monitored status to the personal
data device for use by the user.

ABSTRACT OF THE DISCLOSURE

A self service data interface includes communications logic providing communications with a personal data device and a data infrastructure, such as the computer resources in a department or building. A processor executes a data interface management process that communicates with the data infrastructure to obtain information about available data services, where the information includes information about how the available data services are accessed. The data interface management process also communicates with the personal data device to provide the information about the available data services to the user. The information is used by the personal data device to invoke the services directly via the self service data interface. The self service interface can have multiple communications links to the personal data device, such as a wire link and a wireless link. The information from the self service data interface can be provided as a hypertext page that is accessed and handled by a browser within the personal data device.

226462_1

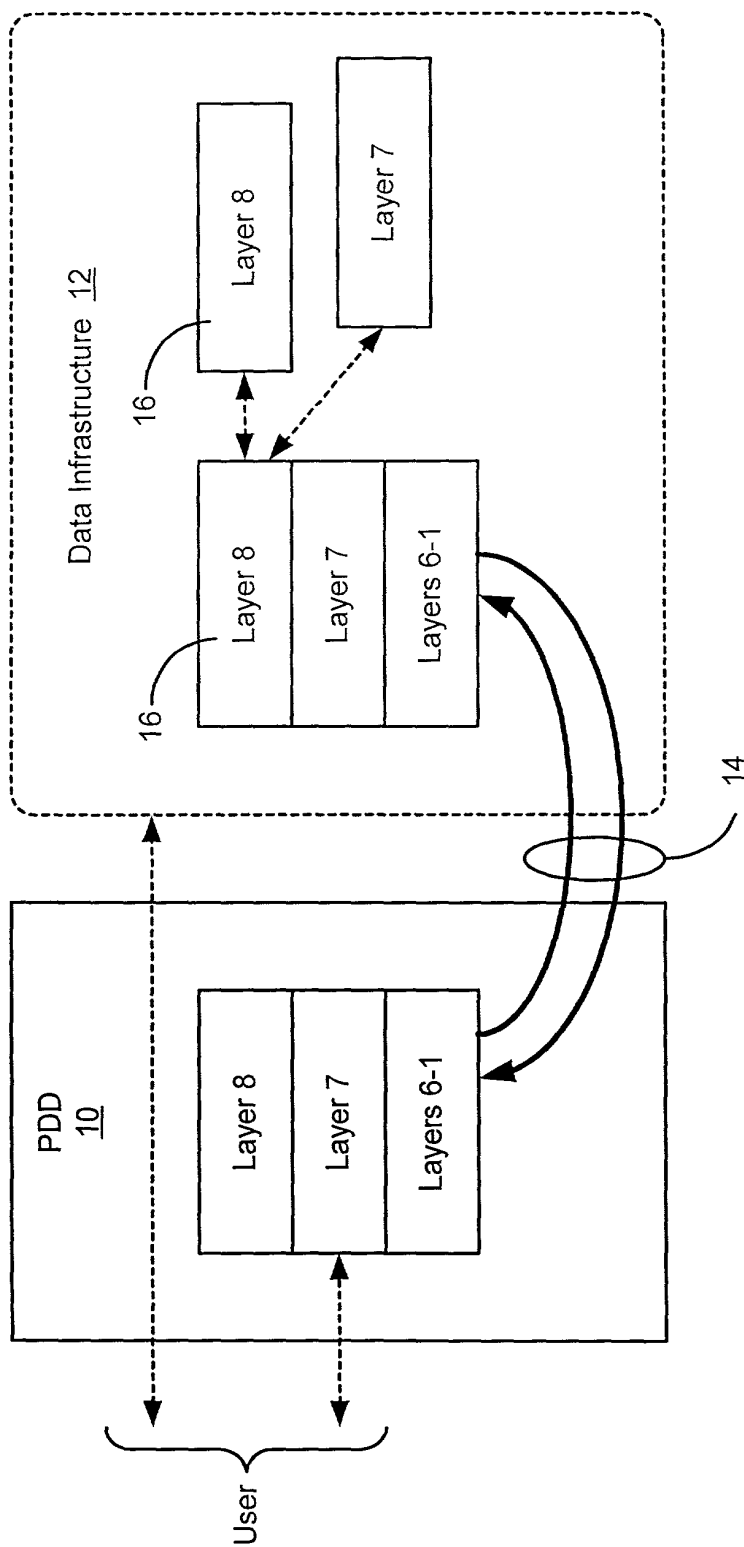


Fig. 1

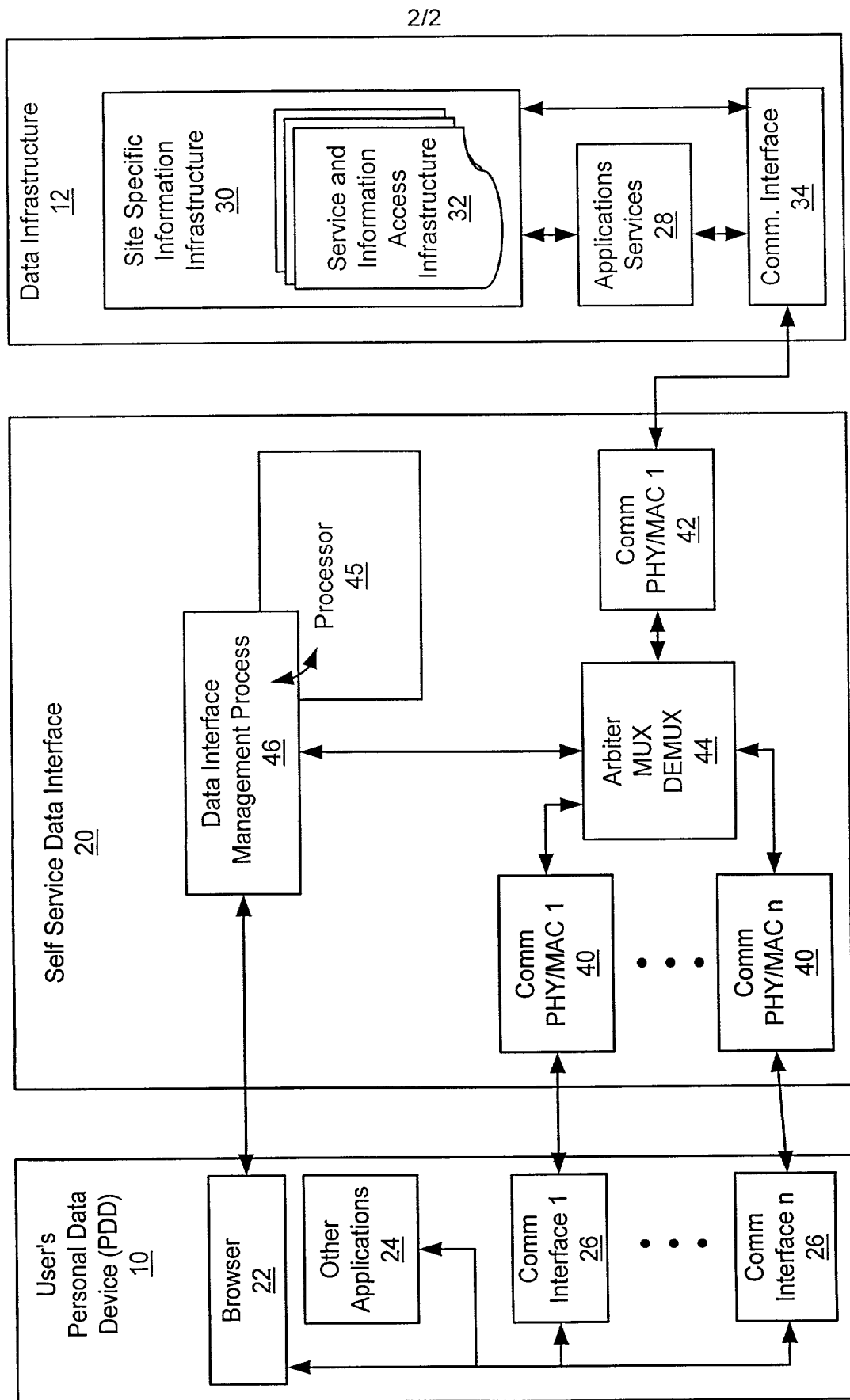


Fig. 2

Attorney
Docket No.: SYNER-162XX

DECLARATION AND POWER OF ATTORNEY

As a below-named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name;

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

SELF SERVICE DATA INTERFACE

the specification of which (check one):

☒ is attached hereto. ☐ was filed _____ as Application No. _____;
amended on _____ (if applicable).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the patentability of this application in accordance with Title 37, Code of Federal Regulations §1.56(a).

I hereby claim foreign priority benefits under Title 35, USC §119(a)-(d) of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

<u>Prior Foreign Application(s)</u>	<u>Date Filed</u>	<u>Priority Claimed</u>
_____ (Number) (Country)	_____ (Day/Month/Year)	<input type="checkbox"/> <input type="checkbox"/> Yes No
_____ (Number) (Country)	_____ (Day/Month/Year)	<input type="checkbox"/> <input type="checkbox"/> Yes No
_____ (Number) (Country)	_____ (Day/Month/Year)	<input type="checkbox"/> <input type="checkbox"/> Yes No

I hereby claim the benefit under Title 35, USC §119(e) of any United States provisional application(s) listed below:

60/201,956 _____ (Application Number)	May 5, 2000 _____ (Filing Date)
_____ (Application Number)	_____ (Filing Date)
_____ (Application Number)	_____ (Filing Date)

Express Mail Number

E1418429697US

Attorney

Docket No.: SYNER-162XX

I hereby claim the benefit under Title 35 USC §120 of any United States application(s) listed below and insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35 USC §112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, §1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

_____ (Application No.)	_____ (Filing Date)	_____ (Patented/pending/abandoned)
_____ (Application No.)	_____ (Filing Date)	_____ (Patented/pending/abandoned)
_____ (Application No.)	_____ (Filing Date)	_____ (Patented/pending/abandoned)

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) to prosecute this application and transact all business connected therewith in the Patent and Trademark Office, and to file with the USRO any International Application based thereon.

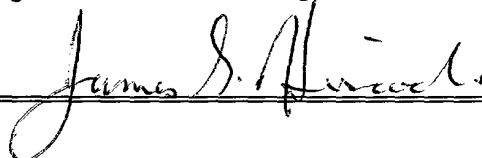
Stanley M. Schurgin, Reg. No. 20,979
 Charles L. Gagnebin III, Reg. No. 25,467
 Paul J. Hayes, Reg. No. 28,307
 Victor B. Lebovici, Reg. No. 30,864

Eugene A. Feher, Reg. No. 33,171
 Beverly E. Hjorth, Reg. No. 32,033
 Holliday C. Heine, Reg. No. 34,346
 Gordon R. Moriarty, Reg. No. 38,973

Address all correspondence to:

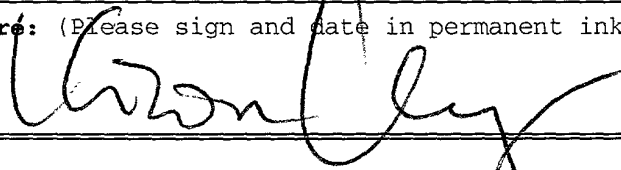
WEINGARTEN, SCHURGIN, GAGNEBIN & HAYES LLP
 Ten Post Office Square
 Boston, Massachusetts 02109
 Telephone: (617) 542-2290
 Telecopier: (617) 451-0313

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full Name of First Inventor: James S. Hiscock		
City of Residence Rockport	State or Country Massachusetts	Country of Citizenship USA
Post Office Address 11 Penzance Road	City Rockport	State or Country Zip Code Massachusetts 01966
Signature: (Please sign and date in permanent ink.) X 		Date signed: X July 7, 2000

Attorney


Docket No.: SYNER-162XX

Full Name of Second Inventor: Kiwon Chang		
City of Residence Needham	State or Country Massachusetts	Country of Citizenship USA
Post Office Address 62 Rivard Road	City Needham	State or Country Zip Code Massachusetts 02192
Signature: (Please sign and date in permanent ink.) X 		Date signed: X 7/17/00

006080 "525E960

Attorney

Docket No.: SYNER-162XX

Full Name of Third Inventor:		
Floyd Backes		
City of Residence	State or Country	Country of Citizenship
Sharon	New Hampshire	USA
Post Office Address	City	State or Country Zip Code
405 Spring Hill Road	Sharon	New Hampshire 03458
Signature: (Please sign and date in permanent ink.)		Date signed:
X 		X 25-JULY-2000

006030" 5/25/99

Attorney

Docket No.: SYNER-162XX

Full Name of Fourth Inventor: Myles Kimmit		
City of Residence Shewsbury	State or Country Massachusetts	Country of Citizenship USA
Post Office Address 1 Kemble Drive	City Shewsbury	State or Country Zip Code Massachusetts 01545
Signature: (Please sign and date in permanent ink.) x <i>Myles Kimmit</i>		Date signed: x 7/17/2020

229030-1

20250909 14:36:36